

Christopher Scaduto – Curriculum Vitae

Simons Center for Geometry and Physics
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Research Interests

Mathematical gauge theory and its applications to the topology of manifolds. Particular interests include Floer homology and its applications to 3-manifolds, 4-manifolds and knots; Yang-Mills and Seiberg-Witten theory; Khovanov homology; gauge theory in higher dimensions; topology of special holonomy geometry.

Education

2010-2015 PhD in Mathematics, University of California, Los Angeles
Thesis: *Instantons and odd Khovanov homology*
Advisor: Ciprian Manolescu

2006-2009 BSc in Applied Mathematics, Columbia University
Magna cum laude

Employment History

Sep 2016 - Present Simons Center for Geometry and Physics at Stony Brook University
Joint Assistant Professor and NSF Postdoctoral Fellow
Sponsoring Scientist: Simon Donaldson

Sep 2015 - Aug 2016 Department of Mathematics, Brandeis University
NSF Postdoctoral Fellow
Sponsoring Scientist: Daniel Ruberman

Awards

- NSF Mathematical Sciences Postdoctoral Fellowship, 2015
- Heaviside Wealth Management Award, 2015
- Pacific Journal of Mathematics Dissertation Prize, 2015
- Stephen J. Girsky Fellowship Award at UCLA, 2014

Publications and Preprints

1. *Niemeier lattices, smooth 4-manifolds and instantons*, preprint (2018), arXiv:1808.10321
2. *On definite lattices bounded by integer surgeries along knots with slice genus at most 2* (with M. Golla), preprint (2018), arXiv:1807.11931
3. *On definite lattices bounded by a homology 3-sphere and Yang-Mills instanton Floer theory*, preprint (2018), arXiv:1805.07875
4. *An odd Khovanov homotopy type* (with S. Sarkar and M. Stoffregen), preprint (2018), arXiv:1801.06308
5. *On Newstead's Mayer-Vietoris argument in characteristic 2* (with M. Stoffregen), preprint (2017), arXiv:1707.06268

6. *The cohomology of rank two stable bundle moduli: mod two nilpotency and skew Schur polynomials* (with M. Stoffregen), arXiv:1707.06207 (2017), to appear in Canadian Journal of Mathematics.
7. *Nilpotency in instanton homology, and the framed instanton homology of a surface times a circle* (with W. Chen), Adv. Math. 336 (2018), 377–408.
8. *Two-fold quasi-alternating links, Khovanov homology and instanton homology* (with M. Stoffregen), Quantum Topol. 9 (2018), no. 1, 167–205.
9. *Klein-four connections and the Casson invariant for nontrivial admissible $U(2)$ bundles* (with M. Stoffregen), Algebr. Geom. Topol. 17 (2017), no. 5, 2841–2861.
10. *Instantons and odd Khovanov homology*, J. Topol. 8 (2015), no. 3, 744–810.

In Preparation

- *On the ν -invariants of Joyce's compact G_2 -manifolds* (preprint available upon request)
- *Equivariant aspects of singular instanton Floer homology* (with A. Daemi)
- *Framed instanton homology of surgeries on torus knots* (with T. Lidman and J. Pinzon Caicedo)

Invited Conference Talks

- Gauge Theory and Applications, Univ. of Regensburg, 7/25/2018
- Gauge Theory in Fukuoka, Japan, 2/19/2018
- Gauge Theory and Low-dimensional Topology, Simons Center, 4/28/2017
- AMS Special Session *Floer Theoretic Invariants of 3-manifolds and Knots*, Univ. of Denver, 10/9/2016
- AMS Special Session *Floer Homology, Gauge Theory, and Symplectic Geometry*, MSU, 3/14/2015
- AMS Special Session *Algebraic Structures Motivated by Knot Theory*, UNC Greensboro, 11/8/2014
- AMS Special Session *Interaction between knots and manifolds*, SFSU, 10/25/2014
- AMS Special Session *Invariants in Low-Dimensional Topology*, UMBC, 3/30/2014

Invited Seminar Talks

- UT Austin Topology Seminar, 11/5/2018
- Boston College Geometry/Topology Seminar, 10/25/2018
- Rutgers Geometric Analysis Seminar, 10/2/2018
- MIT Geometry and Topology Seminar, 3/5/2018
- Columbia Symplectic Geometry, Gauge Theory, and Categorification Seminar, 2/23/2018
- University of Miami Geometry/Topology Seminar, 2/9/2018
- University of Oregon Topology Seminar, 6/6/2017
- Princeton University Topology Seminar, 3/9/2017
- Brandeis Topology Seminar, 11/15/2016
- Mathematics of Gauge Fields Seminar at the Simons Center, 10/6/2016
- Boston College Geometry/Topology Seminar, 9/15/2016
- MIT Geometry and Topology Seminar, 11/23/2015

- Brandeis Topology Seminar, 11/10/2015
- Princeton University Topology Seminar, 4/9/2015
- University of Virginia Geometry Seminar, 11/18/2014
- Columbia Symplectic Geometry, Gauge Theory, and Categorification Seminar, 9/12/2014
- Brandeis Topology Seminar, 9/9/2014
- UT Austin GADGET Seminar, 4/29/2014
- Caltech Geometry & Topology Seminar, 4/11/2014

Teaching at Stony Brook University

- MAT 123: Precalculus, Spring 2018
www.ic.sunysb.edu/Faculty/cscaduto/teaching/mat123/index.html
- MAT 118: Mathematical Thinking, Spring 2017
www.ic.sunysb.edu/Faculty/cscaduto/teaching/mat118/index.html

Teaching Assistance at UCLA

- Fall 2014: Math 110AH, Algebra Honors, with Richard Elman
- Spring 2014: Math 117, Algebra for Applications, with Richard Elman
- Winter 2014: Math 132, Complex Analysis for Applications, with Marek Biskup
- Fall 2013: Math 115A, Linear Algebra, with Don Blasius
- Winter 2012: Math 135, Ordinary Differential Equations, with Alethea Barbaro
- Fall 2011: Math 225A, Differential Topology (Graduate), with Peter Petersen

Service and Miscellaneous

- Referee for the publications *Algebraic & Geometric Topology*, *Duke Mathematics Journal*, *Geometry & Topology*, *Journal of Topology*, and *Quantum Topology*
- Reviewer for *Zentralblatt Math* and *Mathematical Reviews*
- Weekly tutor for the *Math Learning Center* (MLC) at Stony Brook University, 2017-2018
- Co-organizer of the *Topology and Symplectic Geometry / Math of Gauge Fields seminar* at the Simons Center and Stony Brook University, 2016-2018
- Organizer of a graduate student gauge theory seminar at Brandeis University, 2016-2017

References

Simon Donaldson

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Tomasz Mrowka

Massachusetts Institute of Technology
 ✉ mrowka@math.mit.edu

David Kahn (teaching)

Stony Brook University
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Ciprian Manolescu

University of California, Los Angeles
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Daniel Ruberman

Brandeis University
 ✉ ruberman@brandeis.edu

Scott Sutherland (teaching)

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